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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

# THE FALLEN LEAF-LAKE TAHOE CONTROL PROJECT

by

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Berkeley, California
March 6 1933

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# THE FALLEN LEAF-LAKE TAHOE CONTROL PROJECT

This project was begun at the recommendation of the Bureau of Entomology and with the cooperation of the Baldwin Estate and Forest Service, during the fall of 1931. Its purpose was to reduce the infestations of Jeffrey pine beetle (Dendroctonus jeffreyi Hopk.) in Jeffrey pine and mountain pine beetle (Dendroctonus monticolae Lec.) in lodgepole pine, concentrated most heavily on the estate.

The situation was first noticed by Forest Service officials, A.N. Weber and R. Bryan, during June, 1931, when an increasing number of faded trees was found as the result of 1930 attacks. An educational campaign to demonstrate the importance of an insect epidemic in this area was started when four heavily-infested Jeffrey pines on the Baldwin Estate were felled and treated. Manager Knisley, recognizing the imminent dangers on the estate, after a conference with the owner, Anita M. Baldwin, decided to control the pests if it was found feasible without the cooperation of other owners in this vicinity. The Forest Service guaranteed the supervision and administration of the project after funds were deposited with the Forest Service headquarters in San Francisco.

The feasibility of this control project was determined by the Bureau of Entomology after a survey of the area had been made as to the extent and character of infestation. The Baldwin Estate was found to include nearly all the heavily timbered stands between Fallen Leaf Lake and Lake Tahoe (see control map) and for nearly half the distance around Fallen Leaf Lake. It was found that due to the local character of infestation on the estate and the natural barriers between the estate and surrounding areas, the control project could be handled as a unit.

Approximately four sections of timber were included in the project, $3\frac{1}{2}$ sections on the Baldwin Estate and less than $\frac{1}{2}$ section belonging to the U.S. Forest Service. This area occupies the north end of the Fallen Leaf Basin and contains some of the finest virgin stands of Jeffrey pine found in the Tahoe region. Most of the area is fairly level, with elevations ranging between 6,250 and 6,600 feet. Lodgepole stands are found in small, locally scattered groups. The upper Fallen Leaf basin is rocky and steep, with scattered stands of white fir, red fir, lodgepole pine, Jeffrey pine and white pine, and with the exception of certain local infestations in white fir and red fir is free of other infestations.

## SURVEYS

Four surveys were made on the control area before the completion of the project, to make certain of the location of all infested trees, following any later attacks made by beetles in flight. Three of these were made by G.R. Struble and A. Wagner of the Bureau of Entomology, and one by A.N. Weber of the U.S. Forest Service. All new trees found were blazed on the north side, numbered conspicuously with black crayon, and located on a map of the area. The number of trees found, and volume in board feet of the trees marked for treatment are listed for each survey in the table which follows.

Table 1. Results of Surveys

| Date : Surveyed by | Jeffrey Pine : Trees | Jeffrey Pine : Volume BM | Lodgepole Pine : Trees | Lodgepole Pine : Volume BM | Tot.Both Spec. : Trees | Tot.Both Spec. : Volume BM |
|---|---|---|---|---|---|---|
| 1931 : | | | | | | |
| 9/21:Struble, Wagner: | 34 | 111,230 | 32 | 5,430 | 66 | 116,660 |
| 11/10:Weber | 111 | 85,000 | 50 | 15,000 | 161 | 100,000 |
| 1932 : | | | | | | |
| 5/21:Struble | 28 | 141,180 | 3 | 610 | 31 | 141,790 |
| 9/22:Struble, Wagner: | 23 | 62,720 | 1 | 1,800 | 24 | 63,520 |
| : Totals | 196 | 400,130 | 86 | 22,840 | 282 | 421,970 |

In addition to the above surveys, Forest Service lands adjoining the Baldwin Estate on the east were cruised and the infested timber was marked. Ten Jeffrey pines, amounting to approximately 25,000 board feet, were treated from funds provided by the Forest Service.

## CONTROL METHODS

Following the recommendations made as a result of the first survey by the Bureau of Entomology, the sum of $1,000 was deposited with the Forest Service by Mrs. Baldwin. A crew of four men was organized by A.M. Weber and control work was begun October 13, 1931. The fall work lasted untilabout December 1, when snow conditions prevented further work until the following April. The same crew resumed work in April and treated all trees located in the fall 1931 and spring 1932 surveys until the middle of June. All new trees located in the fall 1932 survey were treated in October and November 1932.

The methods employed in treating the infested trees consisted in felling, limbing, peeling, brush piling and burning. Logs lying close to the ground surface were cut into sections large enough to roll over, where the infested bark could be more easily treated. Small-sized trees, mostly lodgepole pines, were cut into sections, stacked in a pile and burned. Large trees presented a more difficult problem, but extreme care was taken to treat all infested sections without injury to nearby timber or reproduction. Bark was removed in nearly all cases from Jeffrey pine, to insure the mortality of broods under thick bark of most of the large infested trees.

## COSTS

The total sum spent on the Fallen Leaf-Lake Tahoe Project was $1,341.66. Of this amount $1,261.70 was spent on the Baldwin Estate and $79.96 on Forest Service lands. An additional $261.70 was deposited with the Forest Service by Mrs. Baldwin after the original amount was exhausted, and was sufficient to treat all trees located.

A summary of costs is given below, showing the total amounts expended and unit costs on both the Baldwin Estate and Forest Service lands treated:

### Baldwin Estate

| | |
|---|---|
| Number of trees treated - - - - | 282 |
| Volume board feet- - - - - - - - | 421,970 |
| Total sum expended- - - - - - | $1,261.70 |
| Cost per tree- - - - - - - - - | $4.49 |
| Cost per MBM- - - - - - - - - - | $2.99 |

### Forest Service

| | |
|---|---|
| Number of trees treated- - - - | 10 |
| Volume board feet - - - - - - - - | 25,000 |
| Total sum expended - - - - - - | $79.96 |
| Cost per tree - - - - - - - - - | $8.00 |
| Cost per MBM - - - - - - - - - | $3.16 |

## RESULTS AND DISCUSSION

A definite reduction in the number of infested trees was found as a result of the fall-1932 survey, compared with the survey made during the same season the previous year. The figures in the following table are indicative of the reduction, although a few more trees are apt to show up following the last survey.

Table 2
Comparison of Fall-1931 and Fall-1932 Losses on Baldwin Estate

| Season | Lodgepole Pine: | | Jeffrey Pine | | Total Both Spec. | |
|---|---|---|---|---|---|---|
| | Trees | Volume BM | Trees | Volume BM | Trees | Volume BM |
| 1931 | 32 | 5,430 | 34 | 111,230 | 66 | 116,660 |
| 1932 | 1 | 1,800 | 23 | 62,170 | 24 | 63,970 |
| Reduction | 31 | 3,630 | 11 | 49,960 | 42 | 52,690 |
| % " | 97 | 66 | 33 | 44 | 64 | 46 |

It is evident from these figures that lodgepole infestations were very effectively stopped, and that the losses in Jeffrey pine were greatly reduced. The new trees to fade, following the last survey, should be few in number, but careful watch should be kept to detect them when they appear. All newly faded trees should be treated early in the spring.

With the advice of the Forest Service and further cooperation of the Baldwin Estate, the insect menace to the Fallen Leaf-Lake Tahoe area can be kept down to a minimum. However, in order to check the menace completely, it will be necessary to secure the cooperation of all property owners in this vicinity.

No control method against the infestations of the fir engraver beetle, Scolytus ventralis Lec., in white fir and red fir is as yet applicable to all conditions of infestation found in this and other regions. Trees entirely killed are easily treated by felling and burning, in the same way as for other bark beetles. But trees which are infested in the tops or in scattered patches along the trunk are impossible to treat. For this reason any treatment is nullified unless all infestations are effectively taken care of.

# FALLEN LEAF-LAKE TAHOE CONTROL AREA

SCALE 2" = 1 MILE

_____ BOUNDARY BALDWIN ESTATE